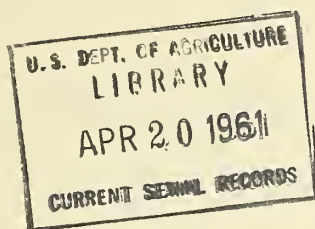


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A DEVICE FOR EVALUATING DEPOSITS
OF GRANULATED PESTICIDES

Agricultural Research Service
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A DEVICE FOR EVALUATING DEPOSITS OF GRANULATED PESTICIDES

By Donald Whittam and Albert H. Higgins

In the application of granulated pesticides to soil surfaces, uniform distribution of the material is of great importance. Perhaps, with no other type of material are effective results so dependent on accurate deposition. The simple device described has been used effectively for evaluating the distribution of deposits produced by pest control machines.

Description:

The device, a "calibration board", consists of a hinged aluminum case approximately 18 x 7 x 3/4 inches in size, containing 17 precision-bore glass tubes 6 inches long, with inside diameter of 1/4 inch (plus or minus 0.0002 inch), spaced 1 inch on centers. The cover is hinged on one end. The inside of the case is painted black to improve observation of the material in the tubes. The length of the case may be varied to accommodate a greater or fewer number of tubes. (See photograph).

The glass tubes are secured inside the case with hardwood strips at the top and bottom extending the length of the case. The top strip is 1/2 x 1/2 inch in size and the bottom is 1/2 x 1/4 inch. Holes, 1/4 inch in diameter are drilled through the bottom strip. One-quarter inch wooden dowels, 7/16 inch long, inserted into the holes, extend into the lower end of the tubes to secure them flush with the top surface of the bottom strip. The dowels should have approximately 0.010 inch wall clearance in the glass tube to allow for expansion if they become damp. The dowels should extend into each tube the same distance to provide a horizontal level plane for observation of the material. Holes, 1/4 inch in diameter, are drilled through the top strip and counterbored on the underside of the strip to a depth of 1/8 inch with a size 0.358 inch T drill. This countersink will serve to prevent breakage of the tubes if the case is flexed or bent slightly.

Operation:

Containers or trays of equal surface area are placed at equal intervals across a proposed swath run to collect material from the dispersal equipment. Aluminum dish pans or special trays may be used, or cone-shaped

receptacles may be constructed for this purpose. Collection pans or containers with a surface area of 648 square inches (1/2 square yard) or greater are satisfactory for ground equipment, and 1296 square inches (1 square yard) or greater for aircraft. The rim of the container should be as narrow as possible to prevent the granules from bouncing on contact with it. However, if a container with a broad rim is used, the surface area should be determined by measurement from the center of the rim.

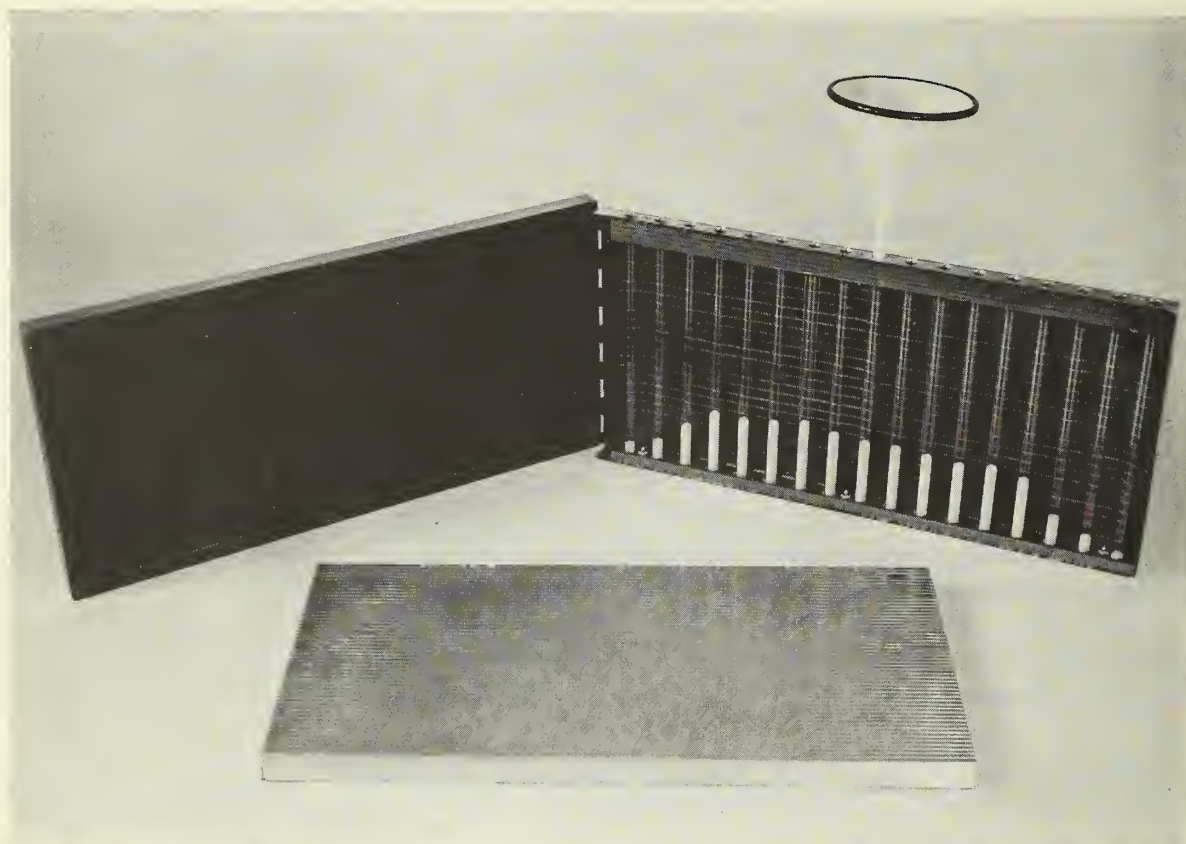
After the application has been completed, the receptacles containing the material are collected and the contents poured into the glass tubes in respective order with the aid of a small funnel. If a plastic funnel is used, it should be made of polyethylene. The material should then be settled in the tubes by stroking them gently with the rubber end of a pencil. The height of the material in the tubes represents the deposit curve across the swath. Ruled paper may be placed behind the tubes to record the height of material in each tube for comparison with collections made subsequent to adjustments in the dispersal equipment.

To establish a column height of material in the tubes that is equal to a given application rate, the following equation may be used.

$$\frac{\text{Container area (sq. in.)} \times \text{application rate (lbs/acre)}}{13,825} = \text{weight in grams}$$

After the weight in grams of the material has been calculated from the above equation, this amount of material is weighed and poured into one of the tubes. The height reached by the material in the tube represents the height which the deposit should average, swath overlap considered, for the desired application rate.

Measurements obtained with the use of this "calibration board", although slightly less accurate than those obtained by weighing each sample, provide for a rapid practical field evaluation of the performance of dispersal equipment.



Calibration device showing the open and closed case, column height of granules in glass tubes resulting from a distribution test, and funnel in position for pouring granules into tubes.

Prepared by

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